
The image shows two large, white, three-bladed wind turbines standing side-by-side. The turbines are positioned in the foreground, with their towers extending from the bottom of the frame. The blades are spread out, and the nacelles are visible. The background is a clear, light blue sky. In the far distance, a low horizon line with some faint structures and hills is visible.

SAULT TRIBE WIND ENERGY FEASIBILITY STUDY PRESENTATION



In 2001, the Tribe's electrical energy costs were \$1.5MM. Windmill electrical power may provide a means for energy cost reduction while environmentally friendly.



Tribal Structure

- Sault Tribe is part of the Anishnabe or Chippewa people
- Officially recognized in the early 1970's - pursuant to the Indian Reorganization Act of 1934
- Became a Tribal Government on November 13, 1975
- Currently the largest employer in northern Michigan
- Provide many services to Tribal members
 - Health
 - Social Services
 - Education
 - Youth and Recreational

Tribal Structure (continued)

- Tribal Membership
 - In 2001, exceeds 30,000
 - The largest Tribe in Michigan
 - Majority live in the seven easternmost counties of the Upper Peninsula



Table 1

- **SEVEN COUNTY ENROLLMENT POPULATION**
- Alger County 497
- Chippewa County 5,908
- Delta County 980
- Luce County 372
- Mackinac County 2,593
- Marquette County 747
- Schoolcraft County 841
- Seven County Total **11,938**

Project Overview

The background of the slide features two large, white, three-bladed wind turbines. They are positioned on the left and right sides of the frame, with their towers extending from the bottom towards the middle. The blades are spread out, and the sky is a clear, light blue. The overall scene is a photograph of a wind farm.

- Feasibility of a windmill power plant in the Upper Peninsula of Michigan
 - Analyze the economic and technical feasibility of both small and large scale wind power plants
 - Phase One: Development, construction, financing and operation of a small wind power installation..
 - Phase Two: Development, construction, financing and operation of a large-scale wind power plant.

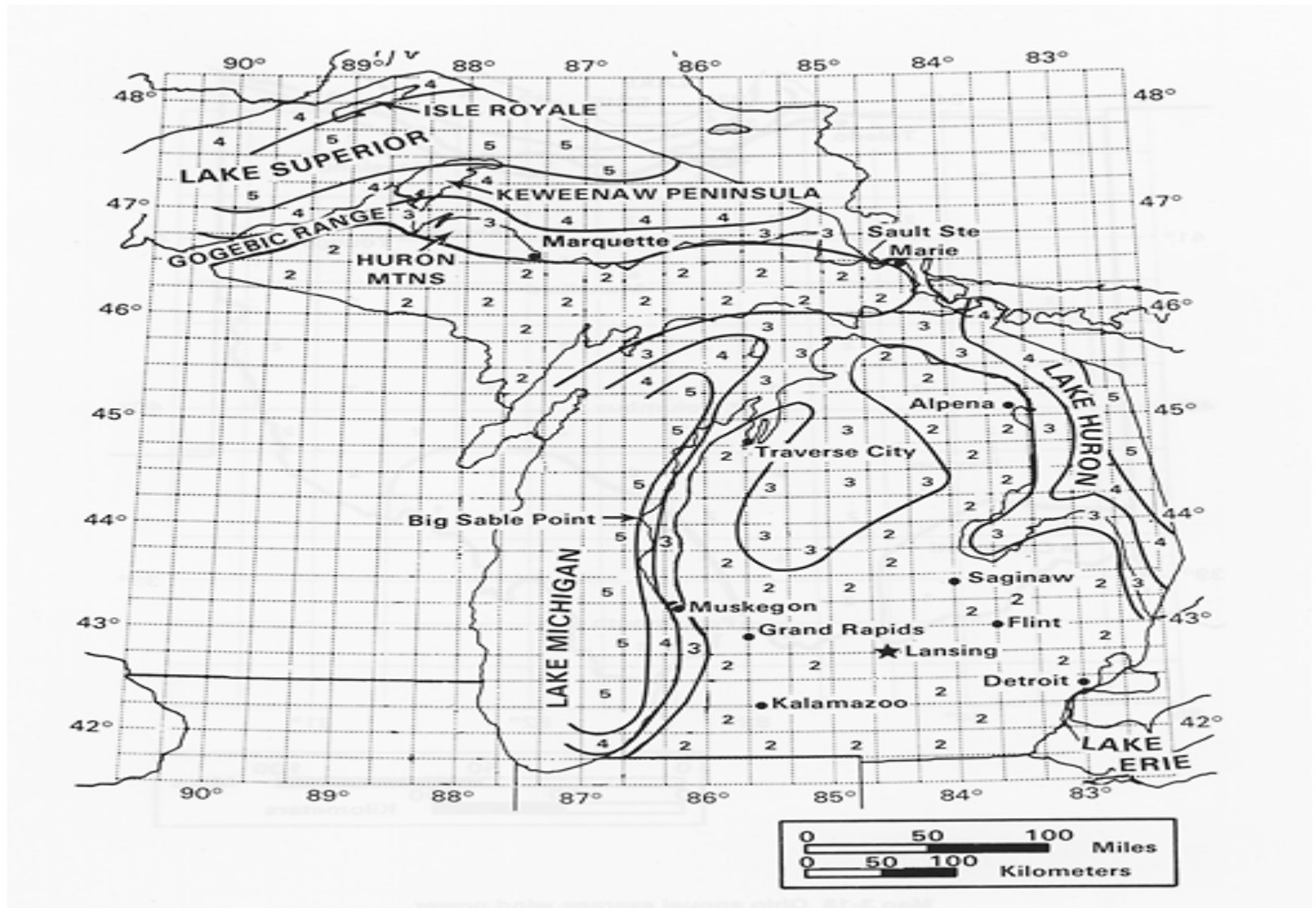
Project Overview (continued)

- Economic and Technical Analysis
 - Wind resource assessment on Tribal lands
 - Evaluation of existing transmission system to evacuate power
 - Designs and cost estimates
 - Environmental issues
 - Electricity cost and economic viability
 - Partner with utility companies

Estimating Wind Energy Resource

- Wind energy resource is estimated by wind power classes, ranging from class 1 (lowest) to class 7 (highest)
- Areas designated class 3 or greater are suitable for most wind turbine applications, whereas class 2 areas are marginal
- **In the Upper Peninsula of Michigan, we have wind classes from 2-5 (see map following):**
 - Class 2: inland (marginal)
 - Class 3: exposed lakeshore areas such as SSM, Whitefish Point, Munising, lower portions of the Keweenaw Peninsula, St. Ignace, Detour/Drummond Island and the Garden Peninsula.
 - Class 4: Middle portion of Keweenaw Peninsula
 - Class 5: Tip of the Keweenaw Peninsula, Isle Royale and offshore areas of Lake Superior

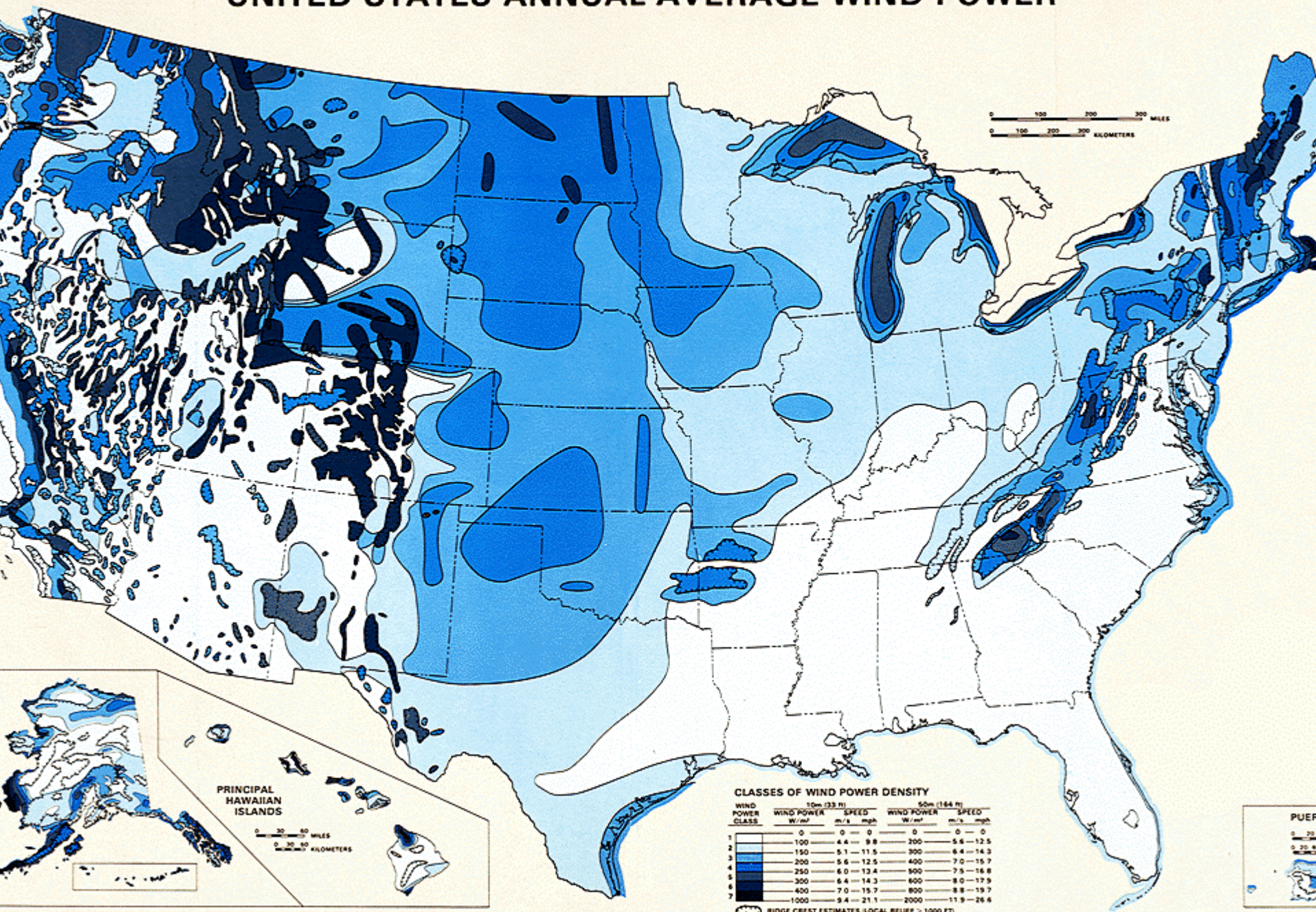
Map of Wind Resource Potential in Michigan



Estimating Wind Energy Resource

- Michigan's wind energy potential ranks 14th out of the lower 48 contiguous states
- Michigan has wind potential to justify a wind feasibility study (see map following):

UNITED STATES ANNUAL AVERAGE WIND POWER

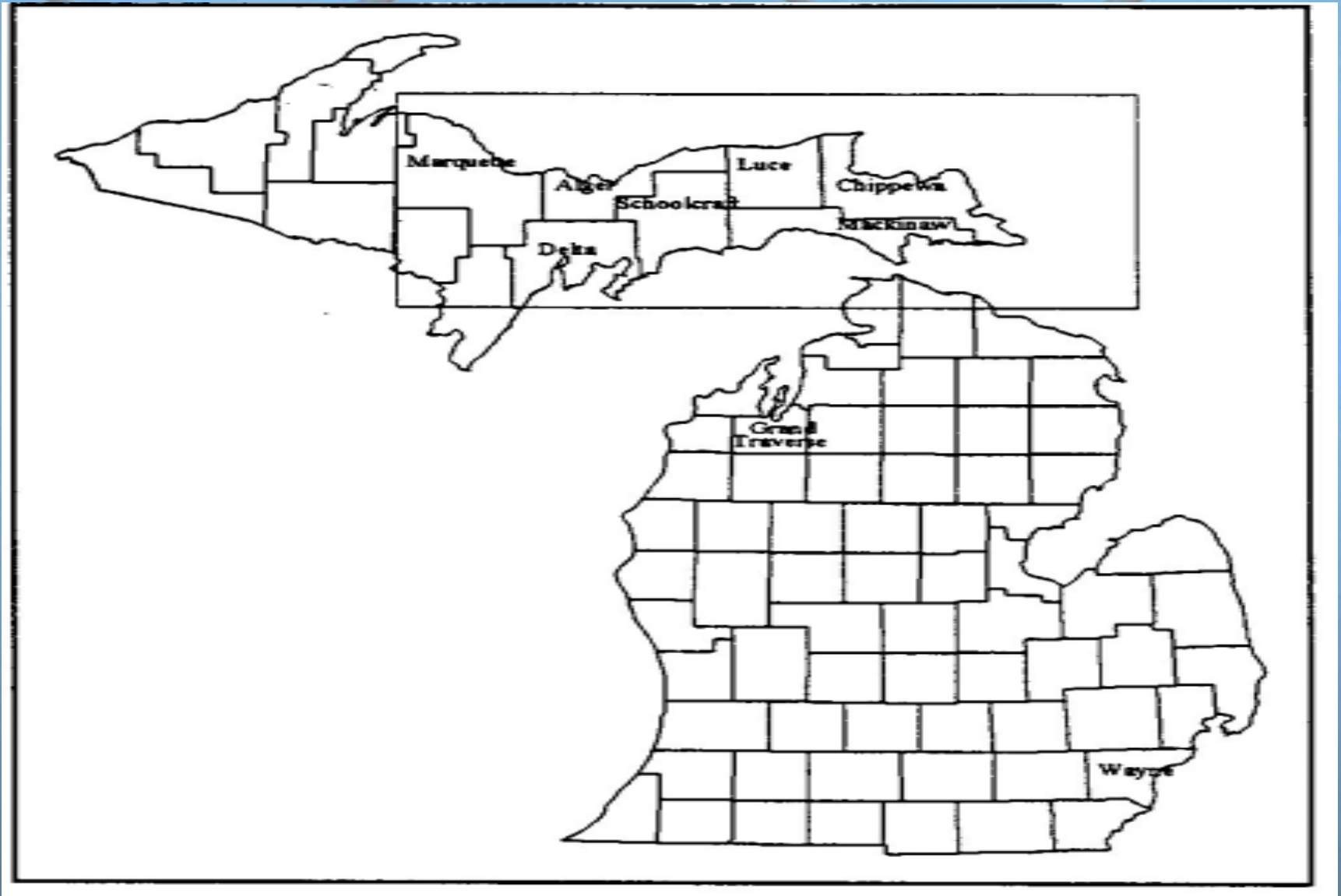


Project Location

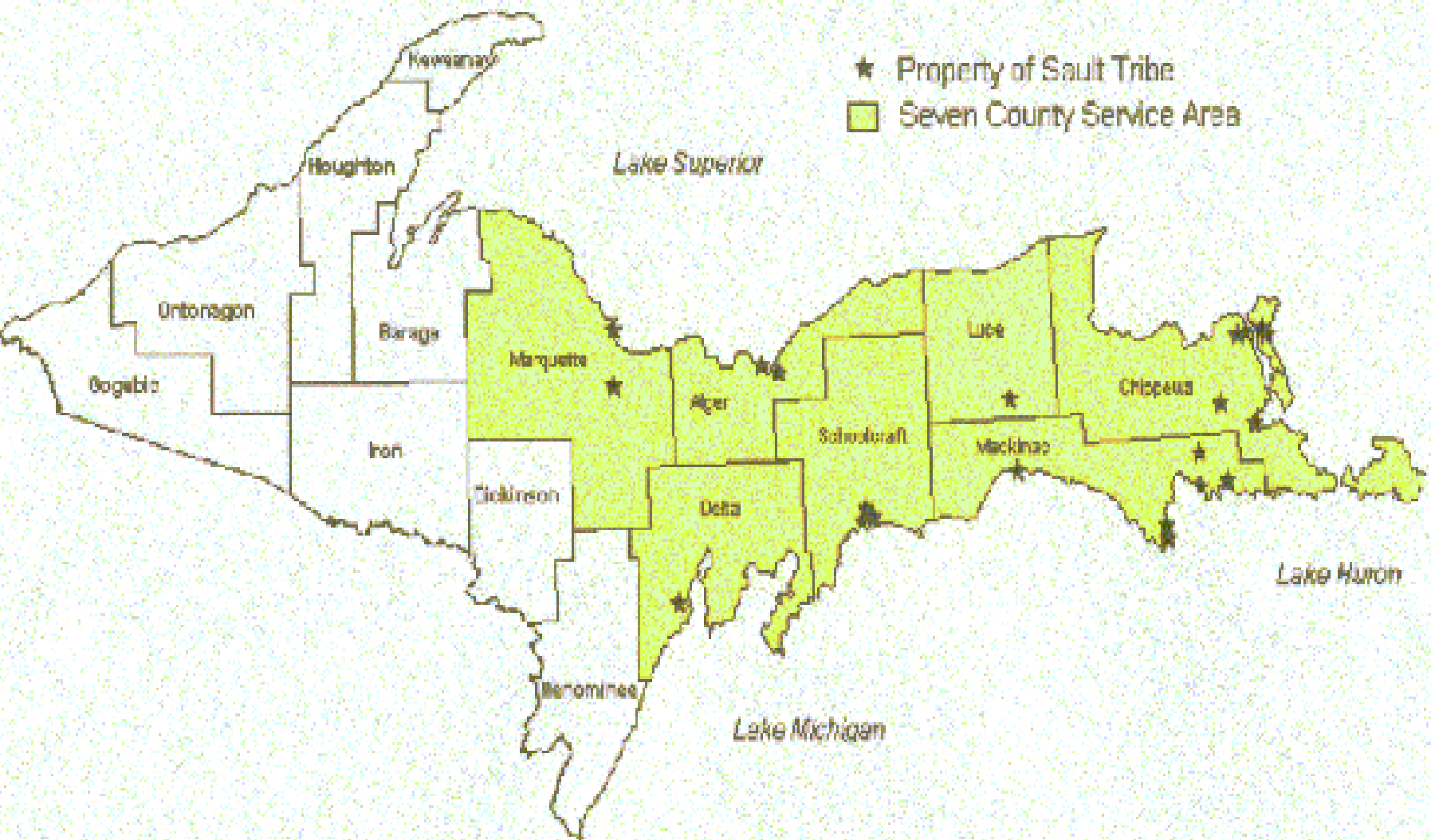
- Climate
 - Long, windy, cold winters
 - Mild summers
 - Wind energy resource in Michigan
 - Ideal conditions for wind energy at exposed lakeshore locations (see maps following):



Project Location - Service Area Map



Upper Peninsula of Michigan



Windmill Power Plant Locations in Great Lakes Region

- Wind power plants in the Great Lakes region currently exist in Wisconsin and Michigan only
 - Since 1998, five Wisconsin wind power plants have gone online and are located northeast of Green Bay, south of Lake Winnebago, and south of Wisconsin River.
 - Michigan has two wind power plants
 - Traverse City operating since 1996.
 - Mackinaw City operating since 2001.

Windmill Power Plant Locations in Great Lakes Region

- Proposed wind power plants in the Great Lakes region are planned for Wisconsin, Illinois and Michigan only
 - A Wisconsin project is planned for just north of Milwaukee, off Lake Michigan.
 - Illinois has two proposed projects located just southeast of Chicago.
 - Michigan has two proposed projects: Friendship Township in Emmet County, and Benona Township (north of Muskegon, off Lake Michigan).

Map of Windmill Power Plant Locations in Great Lakes Region



Project Participants

The background of the slide features two large, white, three-bladed wind turbines. They are positioned on the left and right sides of the frame, with their towers extending from the bottom towards the middle. The blades are spread out, and the nacelles have some text on them, though it's not clearly legible. The sky is a clear, pale blue, and the overall lighting suggests a bright, sunny day.

- Sault Tribe
 - Project Director
 - Grants Administrator
 - Resource Specialist
 - Legal Department
 - Technical Advisor
 - Administrative Assistant

Project Participants (cont.)

- Global Energy Concepts (GEC)
 - Chief Executive Officer
 - Karen Conover
 - Registered Professional Engineer
 - Kevin Smith
 - Technical Assistance
 - Rana Vilhauer



Project Participants (cont.)

- GEC - Subcontractors
 - Lake Michigan Wind and Sun
 - John Hippensteel
 - Consulting Engineer and Meteorologist
 - Robert Owen



Objectives

The background of the slide features two large, white, three-bladed wind turbines. They are positioned on the left and right sides of the frame, with their towers extending from the bottom towards the top. The blades are spread out, and the nacelles have the word 'NEEDHAM' written on them. The sky is a clear, light blue, and the ground at the bottom is dark and flat, with some distant structures visible.

- Lower long-term energy costs by using wind energy to offset current costs
- Diversify employment opportunities
- Develop renewable energy resources to become economically self-sufficient
- Develop a significant source of renewable energy for our community

Technical Assistance

The background of the slide features two large, white, three-bladed wind turbines. They are positioned symmetrically on either side of the center, with their towers extending from the bottom towards the middle of the frame. The blades are spread out, and the sky is a clear, pale blue. The overall image conveys a sense of clean, renewable energy.

- GEC - works extensively with the National Renewable Energy Laboratory (NREL)
 - Welcome input, oversight and review from the NREL and the Department of Energy.
 - Has worked with Indians Tribes with successful outcomes.

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